

Wwamucha
10/5/1823

Page 1

=> fil reg

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

0.21

0.21

FILE 'REGISTRY' ENTERED AT 12:12:50 ON 26 JUL 2005

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STRUCTURE FILE UPDATES: 25 JUL 2005 HIGHEST RN 856925-80-9

DICTIONARY FILE UPDATES: 25 JUL 2005 HIGHEST RN 856925-80-9

New CAS Information Use Policies, enter HELP USAGETERMS for details.

TSCA INFORMATION NOW CURRENT THROUGH JANUARY 18, 2005

Please note that search-term pricing does apply when conducting SmartSELECT searches.

*
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added, *
* effective March 20, 2005. A new display format, IDERL, is now *
* available and contains the CA role and document type information. *
*

Structure search iteration limits have been increased. See HELP SLIMITS for details.

Experimental and calculated property data are now available. For more information enter HELP PROP at an arrow prompt in the file or refer to the file summary sheet on the web at:
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> e dihydroxydiphenylsulfone/cn 5

E1 1 DIHYDROXYDIPHENYLSILANE-N,N'-(4,4'-DIPHENYLMETHANE)BISMALEIM
IDE COPOLYMER/CN
E2 1 DIHYDROXYDIPHENYLSILANE-TETRABUTOXYTITANIUM POLYMER/CN
E3 0 --> DIHYDROXYDIPHENYLSULFONE/CN
E4 1 DIHYDROXYDIPHENYLTELLURIUM/CN
E5 1 DIHYDROXYDIPICOLINATE SYNTHASE (CHROMOBACTERIUM VIOLACEUM ST
RAIN ATCC 12472 GENE CV2825)/CN

=> e trihydroxytriphenylsulfone/cn 5

E1 1 TRIHYDROXYSTEARIN/CN
E2 1 TRIHYDROXYTETRAFLUOROPROPANOL/CN
E3 0 --> TRIHYDROXYTRIPHENYLSULFONE/CN
E4 1 TRIHYDROXYVINYLSILANE/CN
E5 1 TRII PROTEIN (YERSINIA PSEUDOTUBERCULOSIS STRAIN IP32953 PLA
SMID PYV GENE TRII)/CN

=> s dihydroxy(1)diphenylsulfone

358863 DIHYDROXY

403 DIPHENYLSULFONE

Prepared by: Mary Hale @2-2507 Rem Bldg 1D86

L1 47 DIHYDROXY(L)DIPHENYLSULFONE

=> s trihydroxy(l)triphenylsulfone

74472 TRIHYDROXY

0 TRIPHENYLSULFONE

L2 0 TRIHYDROXY(L)TRIPHENYLSULFONE

=> s trihydroxy(l)triphenylsulphone

74472 TRIHYDROXY

0 TRIPHENYLSULPHONE

L3 0 TRIHYDROXY(L)TRIPHENYLSULPHONE

=> s trihydroxy(l)?phenylsulfone

LEFT TRUNCATION IGNORED FOR '?PHENYLSULFONE' FOR FILE 'REGISTRY'

74472 TRIHYDROXY

434 PHENYLSULFONE

L4 0 TRIHYDROXY(L)?PHENYLSULFONE

Left truncation is not valid in the specified search field in the specified file. The term has been searched without left truncation. Examples: '?TERPEN?' would be searched as 'TERPEN?' and '?FLAVONOID' would be searched as 'FLAVONOID.'

If you are searching in a field that uses implied proximity, and you used a truncation symbol after a punctuation mark, the system may interpret the truncation symbol as being at the beginning of a term. Implied proximity is used in search fields indexed as single words, for example, the Basic Index.

=> fil medl,biosis,embase,caplus;s (l1 or dihydroxydiphenylsulfone or dihydroxydiphenylsulphone)

COST IN U.S. DOLLARS

SINCE FILE

TOTAL

ENTRY

SESSION

FULL ESTIMATED COST

38.52

38.73

FILE 'MEDLINE' ENTERED AT 12:15:10 ON 26 JUL 2005

FILE 'BIOSIS' ENTERED AT 12:15:10 ON 26 JUL 2005

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FILE 'EMBASE' ENTERED AT 12:15:10 ON 26 JUL 2005

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FILE 'CAPLUS' ENTERED AT 12:15:10 ON 26 JUL 2005

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L5 3 FILE MEDLINE

L6 2 FILE BIOSIS

L7 1 FILE EMBASE

L8 1120 FILE CAPLUS

TOTAL FOR ALL FILES

L9 1126 (L1 OR DIHYDROXYDIPHENYLSULFONE OR DIHYDROXYDIPHENYLSULPHONE)

=> s trihydroxytriphenylsulfone or trihydroxy(l)triphenylsulfone or trihydroxy(l)triphenylsulphone

L10 0 FILE MEDLINE

L11 0 FILE BIOSIS

Page 3

L12 0 FILE EMBASE
L13 0 FILE CAPLUS

TOTAL FOR ALL FILES

L14 0 TRIHYDROXYTRIPHENYLSULFONE OR TRIHYDROXY(L) TRIPHENYLSULFONE OR
TRIHYDROXY(L) TRIPHENYLSULPHONE

=> s ?triphenylsulfone? or ?triphenylsulphone?

L15 0 FILE MEDLINE
L16 0 FILE BIOSIS
L17 0 FILE EMBASE
L18 1 FILE CAPLUS

TOTAL FOR ALL FILES

L19 1 ?TRIPHENYLSULFONE?. OR ?TRIPHENYLSULPHONE?

=> s l19 and l19

L20 0 FILE MEDLINE
L21 0 FILE BIOSIS
L22 0 FILE EMBASE
L23 0 FILE CAPLUS

TOTAL FOR ALL FILES

L24 0 L19 AND L19

=> s (dissolv? or suspend?) and l19

L25 0 FILE MEDLINE
L26 0 FILE BIOSIS
L27 0 FILE EMBASE
L28 46 FILE CAPLUS

TOTAL FOR ALL FILES

L29 46 (DISSOLV? OR SUSPEND?) AND L19

=> s alkali metal hydroxide and l29

L30 0 FILE MEDLINE
L31 0 FILE BIOSIS
L32 0 FILE EMBASE
L33 0 FILE CAPLUS

TOTAL FOR ALL FILES

L34 0 ALKALI METAL HYDROXIDE AND L29

=> s crude and l29

L35 0 FILE MEDLINE
L36 0 FILE BIOSIS
L37 0 FILE EMBASE
L38 4 FILE CAPLUS

TOTAL FOR ALL FILES

L39 4 CRUDE AND L29

=> d 1-4 ibib abs;s wakayama f?/au;s yanase n?/au;s kitahara t?/au;s nate n?/au

L39 ANSWER 1 OF 4 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2001:780846 CAPLUS

DOCUMENT NUMBER: 135:318322

TITLE: Semi-continuous method for producing 4,4'-
dihydroxydiphenylsulfone from phenol and a
sulfonating agent in heated water

Prepared by: Mary Hale @2-2507 Rem Bldg 1D86

INVENTOR(S): Pabst, Gunther; Kast, Juergen
 PATENT ASSIGNEE(S): Basf A.-G., Germany
 SOURCE: PCT Int. Appl., 16 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: German
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2001079163	A1	20011025	WO 2001-EP4081	20010410
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG				
DE 10018580	A1	20011025	DE 2000-10018580	20000414
AU 2001054801	A5	20011030	AU 2001-54801	20010410
EP 1272462	A1	20030108	EP 2001-927904	20010410
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR				
JP 2003531137	T2	20031021	JP 2001-576765	20010410
US 2003149308	A1	20030807	US 2002-257328	20021010
US 6700020	B2	20040302		
PRIORITY APPLN. INFO.:			DE 2000-10018580	A 20000414
			WO 2001-EP4081	W 20010410

OTHER SOURCE(S): CASREACT 135:318322

AB A semi-continuous method for producing 4,4'-
 dihydroxydiphenylsulfone comprises: (a) reacting phenol with a
 sulfonating agent (e.g., concentrate sulfuric acid); (b) **suspending**
 the resulting **crude** product in $\geq 40^\circ$ water which is
 free from inert organic solvents and can contain residual amts. of unreacted
 phenol, and filtering off the product; and (c) returning the resulting
 waste streams containing the educt and/or product to the production process.

Step

(b) is carried out using the **crude** product and water in a weight
 ratio of 85:15 to 55:45.

REFERENCE COUNT: 2 THERE ARE 2 CITED REFERENCES AVAILABLE FOR THIS
 RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L39 ANSWER 2 OF 4 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1995:356764 CAPLUS
 DOCUMENT NUMBER: 122:119046
 TITLE: A heat-sensitive recording material.
 INVENTOR(S): Kobayashi, Norio; Takahashi, Toshiaki; Makino, Masahiro; Hosoda, Masaaki
 PATENT ASSIGNEE(S): Nicca Chemical Co., Ltd., Japan
 SOURCE: Eur. Pat. Appl., 11 pp.
 CODEN: EPXXDW
 DOCUMENT TYPE: Patent
 LANGUAGE: English
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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EP 616897	A2	19940928	EP 1994-104540	19940323
EP 616897	A3	19941214		
EP 616897	B1	19990616		

R: CH, DE, FR, GB, IT, LI

JP 06270550	A2	19940927	JP 1993-89426	19930324
US 5378674	A	19950103	US 1994-216379	19940323

PRIORITY APPLN. INFO.:		JP 1993-89426	A	19930324
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AB A heat-sensitive recording material comprises a heat-sensitive color forming layer which is formed on a supporter and contains a colorless or light color leuco dyestuff as a color forming substance, a developer which develops color of the leuco dyestuff by reaction with it when heated and a sensitizer. The developer is 2,4'-**dihydroxydiphenylsulfone** having purity of 97% or more and prepared by washing and drying crystal which is obtained by **dissolving crude** 2,4'-**dihydroxydiphenylsulfone** in an alc. having 1 to 4 C atoms or in a mixture of an alc. having 1 to 4 C atoms and H2O by heating and then cooling the solution or partially removing the solvent from the solution by distillation The heat-sensitive recording material has excellent properties, such as reduced fog and excellent image preservation (weatherability).

L39 ANSWER 3 OF 4 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1990:7167 CAPLUS
DOCUMENT NUMBER: 112:7167
TITLE: Process for the purification and isolation of mixtures of 4,4'- and 2,4'-**dihydroxydiphenylsulphone**
INVENTOR(S): Arient, Josef
PATENT ASSIGNEE(S): Czech.
SOURCE: Czech., 3 pp.
CODEN: CZXXA9
DOCUMENT TYPE: Patent
LANGUAGE: Czech
FAMILY ACC. NUM. COUNT: 1
PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CS 257071	B1	19880415	CS 1986-6143	19860822
			CS 1986-6143	19860822

PRIORITY APPLN. INFO.:

AB PhOH is sulfonated at 180-190°, the **crude** product is **dissolved** in hot aqueous NaOH, and the solution is boiled with C to remove resinous and colored contaminants. The hot filtrate is decolorized with a 2-5% aqueous Na2S2O5 solution and product (70%) containing the title compds. is separated with HCl from a cooled solution

L39 ANSWER 4 OF 4 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1946:32301 CAPLUS
DOCUMENT NUMBER: 40:32301
ORIGINAL REFERENCE NO.: 40:6281c-e
TITLE: U.S. Government reports disclose German process developments
AUTHOR(S): Curtis, Francis J.; Fogler, F.
CORPORATE SOURCE: I.G. Farbenindustrie A.-G. Elherfeld and Leverkusen
SOURCE: Shoe and Leather Reporter (1946), 241(No. 11), 29-30
CODEN: SLREAY; ISSN: 0096-9257
DOCUMENT TYPE: Journal
LANGUAGE: Unavailable
AB Tanigan Extra A is a mixture of 4,4'-**dihydroxydiphenylsulfone** (I)

and dihydroxydiphenylsulfone formaldehyde resin (II) in sulfite liquor (III). To prepare III treat raw CaHSO₃ waste liquor at 50° with 50% NaOH to pH 8.6, then at 55° with NaOH until no further precipitate of lime forms. Mix 0.5 hr., filter, let settle 12 hrs. until Ca content is less than 0.1%, then concentrate to 53% solids. To prepare I run

1600

I. of H₂SO₄.H₂O into 9400 l. of crude phenol at 65° in 3 hrs.; heat under reduced pressure to 150°, distilling off 5000 l. of excess phenol and H₂O in 30 hrs. Neutralize and dissolve in 520 l. of 50% NaOH and 2600 l. of H₂O under pressure. The resin is prepared by stirring together 11,600 l. of III and 800 l. of I at 110°, adjusting to an alkali number of 4.0, then, at 65°, adding the necessary HCHO (approx. 60 l. per 100 kg. of sulfone) in 20 min. and heating to 105° until condensation is complete. Yield: 4.4 to 4.8 times the amount of phenol. Brief descriptions of preparation of Tanigans

Extra

B and Extra E are given.

L40	3	FILE MEDLINE
L41	1	FILE BIOSIS
L42	2	FILE EMBASE
L43	1	FILE CAPLUS

TOTAL FOR ALL FILES

L44	7	WAKAYAMA F?/AU
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L45	32	FILE MEDLINE
L46	26	FILE BIOSIS
L47	29	FILE EMBASE
L48	188	FILE CAPLUS

TOTAL FOR ALL FILES

L49	275	YANASE N?/AU
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L50	369	FILE MEDLINE
L51	458	FILE BIOSIS
L52	326	FILE EMBASE
L53	994	FILE CAPLUS

TOTAL FOR ALL FILES

L54	2147	KITAHARA T?/AU
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L55	0	FILE MEDLINE
L56	5	FILE BIOSIS
L57	0	FILE EMBASE
L58	21	FILE CAPLUS

TOTAL FOR ALL FILES

L59	26	NATE N?/AU
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=> s oi f?/au

L60	7	FILE MEDLINE
L61	10	FILE BIOSIS
L62	2	FILE EMBASE
L63	28	FILE CAPLUS

TOTAL FOR ALL FILES

L64 47 OI F?/AU

=> s l64 and l59 and l54 and l49

L65 0 FILE MEDLINE

L66 0 FILE BIOSIS

L67 0 FILE EMBASE

L68 2 FILE CAPLUS

TOTAL FOR ALL FILES

L69 2 L64 AND L59 AND L54 AND L49

=> d 1-2 ibib abs

L69 ANSWER 1 OF 2 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:875243 CAPLUS

DOCUMENT NUMBER: 139:350539

TITLE: Process for producing dihydroxydiphenyl sulfone by crystallization

INVENTOR(S): Oi, Fumio; Yanase, Norio; Kitahara, Takayuki; Nate, Nobuyuki

PATENT ASSIGNEE(S): Konishi Chemical Ind. Co., Ltd., Japan

SOURCE: PCT Int. Appl., 12 pp.

CODEN: PIXXD2

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003091206	A1	20031106	WO 2003-JP5228	20030424
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
EP 1498412	A1	20050119	EP 2003-725653	20030424
R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK				
PRIORITY APPLN. INFO.:			JP 2002-123646	A 20020425
			WO 2003-JP5228	W 20030424

AB Disclosed is a process for producing dihydroxydiphenyl sulfone in which only trihydroxytriphenyl disulfone and coloring impurities are effectively removed without changing the proportion of dihydroxydiphenyl sulfone isomers. The process for producing dihydroxydiphenyl sulfone is characterized by dissolving or suspending crude dihydroxydiphenyl sulfone containing trihydroxytriphenyl disulfone in an aqueous solvent, regulating the pH of the solution or suspension to 5 to 7, optionally cooling it, and separating out the dihydroxydiphenyl sulfone crystals precipitated This process is superior in handlability, safety, sanitation, and cost effectiveness since it uses

water instead of organic solvent. Thus, a mixture of 4,4'-dihydroxydiphenyl sulfone 75, 2,4'-dihydroxydiphenyl sulfone 20, and trihydroxytriphenyl disulfone 5 weight% (100 g containing 0.39 mol 4,4'- and 2,4'-dihydroxydiphenyl sulfone and trihydroxytriphenyl disulfone, APHA 1,000 in acetone solution) was treated with 300 g H₂O and 8 g NaOH (0.2 mol, 0.5-times mole vs. the sulfones), dissolved under heating at 90°, adjusted to pH 6.5 by adding 50% aqueous H₂SO₄, and cooled to 35°, followed by filtration of the precipitated crystals, washing with water, and drying to give 92 g dry crystals containing 4,4'-dihydroxydiphenyl sulfone 78.9, 2,4'-dihydroxydiphenyl sulfone 21.0, and trihydroxytriphenyl disulfone 0.1 weight% (APHA 400 in acetone solution).

REFERENCE COUNT: 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L69 ANSWER 2 OF 2 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2003:841197 CAPLUS

DOCUMENT NUMBER: 139:343510

TITLE: Process for manufacturing mixture of dihydroxydiphenylsulfone isomers

INVENTOR(S): Ogata, Eiji; Oi, Fumio; Yanase, Norio; Nate, Nobuyuki; Kitahara, Takayuki

PATENT ASSIGNEE(S): Konishi Kagaku Kogyo Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 6 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003306477	A2	20031028	JP 2002-352839	20021204
PRIORITY APPLN. INFO.:			JP 2002-38473	A 20020215

AB The title process comprises heating a crude mixture of 2,4'-dihydroxydiphenylsulfone (I), 4,4'-dihydroxydiphenylsulfone (II), water, and an alkali (0.55 equiv relative to the total amount of I and II), cooling the mixture, separating the crystals of II, and adding an acid to the separated liquid

The mixture obtained by the title process contains 25 to 50 weight% I. I and II are developers for thermal recording material.

=> fil reg

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	64.51	103.24

DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	-4.38	-4.38

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STRUCTURE FILE UPDATES: 25 JUL 2005 HIGHEST RN 856925-80-9
 DICTIONARY FILE UPDATES: 25 JUL 2005 HIGHEST RN 856925-80-9

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TSCA INFORMATION NOW CURRENT THROUGH JANUARY 18, 2005

Please note that search-term pricing does apply when
 conducting SmartSELECT searches.

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*****
*
* The CA roles and document type information have been removed from *
* the IDE default display format and the ED field has been added,   *
* effective March 20, 2005. A new display format, IDERL, is now    *
* available and contains the CA role and document type information. *
*
*****
```

Structure search iteration limits have been increased. See HELP SLIMITS
 for details.

Experimental and calculated property data are now available. For more
 information enter HELP PROP at an arrow prompt in the file or refer
 to the file summary sheet on the web at:
<http://www.cas.org/ONLINE/DBSS/registryss.html>

=> e "2,4'-dds"/cn 5

```
E1      1      2,4'-CYCLOHEXYLIDENEDIPHENOL/CN
E2      1      2,4'-DDE/CN
E3      0 --> 2,4'-DDS/CN
E4      1      2,4'-DDT/CN
E5      1      2,4'-DI (SEC-BUTYLAMINOPHENYL) ETHER/CN
```

=> e "4,4'-dds"/cn 5

```
E1      1      4,4'-DDD/CN
E2      1      4,4'-DDE/CN
E3      0 --> 4,4'-DDS/CN
E4      1      4,4'-DDT/CN
E5      1      4,4'-DECAMETHYLENEBIS(1,1-DIETHYLPYPERAZINIUM IODIDE)/CN
```

=> e "2,4'-dihydroxydiphenylsulfone"/cn

```
E1      1      2,4'-DIHYDROXYDIPHENYLMETHANE-4,4'-DIHYDROXYDIPHENYLMETHANE-
          PHENOL-FORMALDEHYDE POLYMER/CN
E2      1      2,4'-DIHYDROXYDIPHENYLMETHANE-FORMALDEHYDE COPOLYMER/CN
E3      0 --> 2,4'-DIHYDROXYDIPHENYLSULFONE/CN
E4      1      2,4'-DIISOCYANATO-1,1'-BICYCLOHEXYL/CN
E5      1      2,4'-DIISOCYANATO-1,2-DIPHENYLETHANE/CN
E6      1      2,4'-DIISOCYANATO-3'-(ETHYLMERCAPTO)DIPHENYL SULFIDE/CN
E7      1      2,4'-DIISOCYANATO-3'-CHLORODIPHENYL SULFIDE/CN
E8      1      2,4'-DIISOCYANATO-3'-CHLORODIPHENYL SULFONE/CN
E9      1      2,4'-DIISOCYANATO-3'-ETHYLDIPHENYL SULFIDE/CN
E10     1      2,4'-DIISOCYANATO-5-METHOXYDIPHENYL SULFIDE/CN
E11     1      2,4'-DIISOCYANATODIPHENYL ETHER/CN
E12     1      2,4'-DIISOCYANATODIPHENYL SULFIDE/CN
```

=> e "2,4'-dihydroxydiphenyl sulfone"/cn

```
E1      1      2,4'-DIHYDROXYCHALCONE/CN
E2      1      2,4'-DIHYDROXYDIBENZOYLMETHANE/CN
E3      1 --> 2,4'-DIHYDROXYDIPHENYL SULFONE/CN
```

E4 1 2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-FORMALDEHYDE COPOLYMER/CN
 E5 1 2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-FORMALDEHYDE-P-PHENOLSULFONIC ACID COPOLYMER/CN
 E6 1 2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-PHENYLDICHLOROPHOSPHINE OXIDE POLYMER/CN
 E7 1 2,4'-DIHYDROXYDIPHENYLAMINE/CN
 E8 1 2,4'-DIHYDROXYDIPHENYLDIMETHYLMETHANE/CN
 E9 1 2,4'-DIHYDROXYDIPHENYLMETHANE/CN
 E10 1 2,4'-DIHYDROXYDIPHENYLMETHANE-4,4'-DIHYDROXYDIPHENYLMETHANE-PHENOL-FORMALDEHYDE POLYMER/CN
 E11 1 2,4'-DIHYDROXYDIPHENYLMETHANE-FORMALDEHYDE COPOLYMER/CN
 E12 1 2,4'-DIISOCYANATO-1,1'-BICYCLOHEXYL/CN

=> s e3-e6

1 "2,4'-DIHYDROXYDIPHENYL SULFONE"/CN
 1 "2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-FORMALDEHYDE COPOLYMER"/CN
 1 "2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-FORMALDEHYDE-P-PHENOLSULFONIC ACID COPOLYMER"/CN
 1 "2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-PHENYLDICHLOROPHOSPHINE OXIDE POLYMER"/CN
 L70 4 ("2,4'-DIHYDROXYDIPHENYL SULFONE"/CN OR "2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-FORMALDEHYDE COPOLYMER"/CN OR "2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-FORMALDEHYDE-P-PHENOLSULFONIC ACID COPOLYMER"/CN OR "2,4'-DIHYDROXYDIPHENYL SULFONE-4,4'-DIHYDROXYDIPHENYL SULFONE-PHENYLDICHLOROPHOSPHINE OXIDE POLYMER"/CN)

=> e "4,4'-dihydroxydiphenyl sulfone"/cn 5

E1 1 4,4'-DIHYDROXYDIPHENYL SULFIDE-ISOPHTHALOYL DICHLORIDE-TEREPHTHALOYL DICHLORIDE COPOLYMER, SRU/CN
 E2 1 4,4'-DIHYDROXYDIPHENYL SULFIDE-TEREPHTHALOYL CHLORIDE COPOLYMER, SRU/CN
 E3 1 --> 4,4'-DIHYDROXYDIPHENYL SULFONE/CN
 E4 1 4,4'-DIHYDROXYDIPHENYL SULFONE BIS(DOCOSANOATE)/CN
 E5 1 4,4'-DIHYDROXYDIPHENYL SULFONE BISFLUOROSULFATE/CN

=> s e3

L71 1 "4,4'-DIHYDROXYDIPHENYL SULFONE"/CN

=> fil medl,biosis,embase,caplus;s l70 or l71

COST IN U.S. DOLLARS	SINCE FILE ENTRY	TOTAL SESSION
FULL ESTIMATED COST	24.72	127.96
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE ENTRY	TOTAL SESSION
CA SUBSCRIBER PRICE	0.00	-4.38

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FILE 'CAPLUS' ENTERED AT 12:24:44 ON 26 JUL 2005

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L72 0 FILE MEDLINE
L73 32 FILE BIOSIS
L74 0 FILE EMBASE
L75 1750 FILE CAPLUS

TOTAL FOR ALL FILES
L76 1782 L70 OR L71

=> s "4,4'-dihydroxydiphenyl sulfone"
L77 1 FILE MEDLINE
L78 1 FILE BIOSIS
L79 3 FILE EMBASE
L80 750 FILE CAPLUS

TOTAL FOR ALL FILES
L81 755 "4,4'-DIHYDROXYDIPHENYL SULFONE"

=> s "2,4'-dihydroxydiphenyl sulfone" ?
ADDITIONAL CHARACTERS REQUIRED AFTER '?' FOR LEFT TRUNCATION
Additional characters must follow the left truncation symbol in your search term. If your search term contains a punctuation mark before the truncation symbol and you are searching in a field that uses implied proximity, the system may interpret the truncation symbol as being at the beginning of a term. Implied proximity is used in search fields indexed as single words, for example, the Basic Index. To see which fields in the current file have left truncation, enter "HELP SFIELDS" at an arrow prompt (=>).

=> s "2,4'-dihydroxydiphenyl sulfone"
L82 0 FILE MEDLINE
L83 0 FILE BIOSIS
L84 0 FILE EMBASE
L85 170 FILE CAPLUS

TOTAL FOR ALL FILES
L86 170 "2,4'-DIHYDROXYDIPHENYL SULFONE"

=> s (l76 or l81 or l86) and (make or making or process? \ or produc?)
<-----User Break----->

SEARCH ENDED BY USER
SEARCH ENDED BY USER

=> s (l76 or l81 or l86) and (make or making or process? or produc?)
L88 0 FILE MEDLINE
L89 8 FILE BIOSIS
L90 1 FILE EMBASE
L91 737 FILE CAPLUS

TOTAL FOR ALL FILES
L92 746 (L76 OR L81 OR L86) AND (MAKE OR MAKING OR PROCESS? OR PRODUC?)

=> s tri hydroxy triphenyl sulfone or trihydroxy triphenyl sulfone or trihydroxytriphenyl sulfone
L93 0 FILE MEDLINE
L94 0 FILE BIOSIS

L95 0 FILE EMBASE
L96 0 FILE CAPLUS

TOTAL FOR ALL FILES

L97 0 TRI HYDROXY TRIPHENYL SULFONE OR TRIHYDROXY TRIPHENYL SULFONE
OR TRIHYDROXYTRIPHENYL SULFONE

=> s triphenylsulfone or triphenyl sulfone or trihydroxy(l)(sulfone or sulphone)

L98 0 FILE MEDLINE
L99 0 FILE BIOSIS
L100 1 FILE EMBASE
L101 6 FILE CAPLUS

TOTAL FOR ALL FILES

L102 7 TRIPHENYLSULFONE OR TRIPHENYL SULFONE OR TRIHYDROXY(L) (SULFONE
OR SULPHONE)

=> s l102 and l92

L103 0 FILE MEDLINE
L104 0 FILE BIOSIS
L105 0 FILE EMBASE
L106 0 FILE CAPLUS

TOTAL FOR ALL FILES

L107 0 L102 AND L92

=> s l92 and crystal? and crude

L108 0 FILE MEDLINE
L109 0 FILE BIOSIS
L110 0 FILE EMBASE
L111 8 FILE CAPLUS

TOTAL FOR ALL FILES

L112 8 L92 AND CRYSTAL? AND CRUDE

=> s l112 not (l39 or l69)

L113 0 FILE MEDLINE
L114 0 FILE BIOSIS
L115 0 FILE EMBASE
L116 5 FILE CAPLUS

TOTAL FOR ALL FILES

L117 5 L112 NOT (L39 OR L69)

=> d 1-5 ibib abs

L117 ANSWER 1 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 2004:758798 CAPLUS

DOCUMENT NUMBER: 141:277350

TITLE: **Process** for preparing mixture of
dihydroxydiphenylsulfone isomers

INVENTOR(S): Oi, Satsuo; Yanase, Norio; Nate, Nobuyuki; Nagaoka,
Etsuzo

PATENT ASSIGNEE(S): Konishi Kagaku Kogyo Co., Ltd., Japan

SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.

CODEN: JKXXAF

DOCUMENT TYPE: Patent

LANGUAGE: Japanese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004256422	A2	20040916	JP 2003-47540	20030225
PRIORITY APPLN. INFO.:			JP 2003-47540	20030225

AB In the manufacture of a mixture of 2,4'-dihydroxydiphenylsulfone (I) and 4,4'-dihydroxydiphenylsulfone (II) containing 10 weight% to 90 weight% I, said mixture of **crude** dihydroxydiphenylsulfone containing phenolsulfonic acid Ph ester (III) as impurity and a mixture of water and lower alc. (IV) containing ≥ 2 weight% IV are mixed and heated and then cooled, and the precipitating **crystals** are separated at pH 4 to 8. Thus, a mixture of **crude** II and I (II/I ratio = 67/33) containing 2.9 weight% III, water, methanol, and sodium hydroxide was stirred and heated until a solution was obtained at 69°C; said solution was cooled to 30°C to give **crystals** of I and II containing only 0.8 weight% III; the pH of said solution before the collection of the **crystals** was 6.8. A high quality heat-sensitive recording paper was **produced** using the title mixture

L117 ANSWER 2 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2004:756320 CAPLUS
 DOCUMENT NUMBER: 141:277349
 TITLE: Method for manufacturing a mixture of dihydroxydiphenylsulfone isomers
 INVENTOR(S): Oi, Satsuo; Yanase, Norio; Nate, Nobuyuki; Nagaoka, Etsuzo
 PATENT ASSIGNEE(S): Konishi Kagaku Kogyo Co., Ltd., Japan
 SOURCE: Jpn. Kokai Tokkyo Koho, 8 pp.
 CODEN: JKXXAF
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2004256421	A2	20040916	JP 2003-47538	20030225
PRIORITY APPLN. INFO.:			JP 2003-47538	20030225

AB In the manufacture of a mixture of 2,4'-dihydroxydiphenylsulfone (I) and 4,4'-dihydroxydiphenylsulfone (II) containing 10 weight% to 90 weight% I, said mixture of **crude** dihydroxydiphenylsulfone containing phenolsulfonic acid Ph ester (III) as impurity, an alkaline substance (e.g., sodium hydroxide) at 0.02 to 0.4 equiv (relative to dihydroxydiphenylsulfone), and an aqueous solvent (e.g., water) are heated and mixed and then cooled, and the precipitating **crystals** are separated. The title method is industrially advantageous. Thus, a mixture of **crude** II and I (II/I ratio = 67/33) containing 2.9 weight% III, water, and sodium hydroxide was stirred and heated until a solution was obtained at 92°C; said solution was cooled to 60°C and kept at 60°C for 1 h to give **crystals** of I and II containing only 0.4 weight% III. A high quality heat-sensitive recording paper was **produced** using the title mixture

L117 ANSWER 3 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 2003:678778 CAPLUS
 DOCUMENT NUMBER: 139:230468
 TITLE: **Process** for preparation of

dihydroxydiphenylsulfone isomeric mixtures
 INVENTOR(S): Oi, Fumio; Yanase, Norio; Nate, Nobuyuki
 PATENT ASSIGNEE(S): Konishi Chemical Ind. Co., Ltd., Japan
 SOURCE: PCT Int. Appl., 20 pp.
 CODEN: PIXXD2
 DOCUMENT TYPE: Patent
 LANGUAGE: Japanese
 FAMILY ACC. NUM. COUNT: 1
 PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 2003070695	A1	20030828	WO 2003-JP1836	20030220
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG				
JP 2003313160	A2	20031106	JP 2002-319967	20021101
PRIORITY APPLN. INFO.:			JP 2002-46629	A 20020222
			JP 2002-319967	A 20021101

OTHER SOURCE(S): CASREACT 139:230468

AB This invention pertains to a method for **producing** high-quality dihydroxydiphenylsulfone isomeric mixts. which cause color development (color formation) in non-image areas when used in thermal recording paper as the developer. Specifically, a **process** for the **prodn** of dihydroxydiphenylsulfone isomeric mixts., characterized by subjecting a solution or suspension of a **crude** isomeric mixture comprising 2,4'-dihydroxydiphenylsulfone and 4,4'-dihydroxydiphenylsulfone in an organic solvent to cooling and filtration successively; a **process** for the **production** of dihydroxydiphenylsulfone isomeric mixts., characterized by mixing a solution or suspension of a **crude** isomeric mixture comprising 2,4'-dihydroxydiphenylsulfone and 4,4'-dihydroxydiphenylsulfone in an organic solvent with an aqueous basic solution to extract the isomeric mixture into the aqueous basic solution, removing the resulting organic solvent layer by liquid-liquid separation, adding an acid to the resulting aqueous basic solution to precipitate **crystals**, and recovering the **crystals** by filtration. For example, phenol was treated with concentrate H2SO4 in 1,2-dichlorobenzene to give a mixture of 2,4'-dihydroxydiphenylsulfone and 4,4'-dihydroxydiphenylsulfone (35/65).

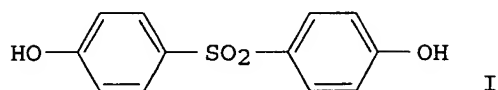
REFERENCE COUNT: 4 THERE ARE 4 CITED REFERENCES AVAILABLE FOR THIS RECORD. ALL CITATIONS AVAILABLE IN THE RE FORMAT

L117 ANSWER 4 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN
 ACCESSION NUMBER: 1988:610700 CAPLUS
 DOCUMENT NUMBER: 109:210700
 TITLE: Synthesis of bisphenol S
 INVENTOR(S): Cui, Xianghao; Wang, Yubin; et al.
 PATENT ASSIGNEE(S): Jilin University, Peop. Rep. China
 SOURCE: Faming Zhuanli Shenqing Gongkai Shuomingshu, 4 pp.
 CODEN: CNXXEV
 DOCUMENT TYPE: Patent
 LANGUAGE: Chinese

FAMILY ACC. NUM. COUNT: 1

PATENT INFORMATION:

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
CN 87100796	A	19870902	CN 1987-100796	19870218
CN 87100796	B	19880907		
PRIORITY APPLN. INFO.:			CN 1987-100796	19870218
GI				



AB Bisphenol S (I), a widely useful industrial chemical, is prepared in an economical **process** without environmental pollution. A mixture of PhOH 198, com. H₂SO₄ 100, and recovered mother liquor from a previous run 287 g was heated 3 h at 190°, cooled to 160°, 10-30% EtOH added at 90°, the solution cooled to 30-50° to precipitate 240 g I and 400 g mother liquor. The **crude** I of 97% purity was purified through activated C to give I of 99.8% purity.

L117 ANSWER 5 OF 5 CAPLUS COPYRIGHT 2005 ACS on STN

ACCESSION NUMBER: 1960:97352 CAPLUS

DOCUMENT NUMBER: 54:97352

ORIGINAL REFERENCE NO.: 54:18409d-i,18410a-i,18411a-i,18412a-g

TITLE: Action of thiols and sulfinic acids on quinol acetates. II

AUTHOR(S): Wessely, F.; Swoboda, J.; Schmidt, G.

CORPORATE SOURCE: Univ. Vienna

SOURCE: Monatshefte fuer Chemie (1960), 91, 57-78

CODEN: MOCMB7; ISSN: 0026-9247

DOCUMENT TYPE: Journal

LANGUAGE: Unavailable

GI For diagram(s), see printed CA Issue.

AB cf. CA 51, 12848a. In continuation of prior work (loc. cit.), the action of MeSH, NaSH, H₂S, PhSH, MeSO₂H, and PhSO₂H with various o-quinol acetates (I) in the presence of various bases in different solvents was investigated. The above thiols gave m- or o-substituted phenols in addition to p-substituted phenols resulting from addition, cleavage of AcOH, and rearrangement reactions. MeSO₂H and PhSO₂H gave chiefly m-substituted phenols. The following I, CR''' : CR' : CH.CR(OAc).CO were used (R, R', R'', R''' given): Me, H, H, H (II); Me, Me, H, H (III); Me, H, Me, H (IV); Me, Me, H, Me (V); Me, H, H, Me (VI); Et, H, H, Et (VII); Et, H, Ph, Et (VIII). The following results were obtained with the I and MeSH [I used, solvent, base, % o-substituted phenol, % m-substituted phenol, % p-substituted phenol, % reduction **product** (this was identical with that phenol which on oxidation with Pb(OAc)₄ gave the I used), sum of identified reaction **products** (%), reaction time given]: II, CH₂Cl₂, Et₃N, 15 2,6-Me(MeS)C₆H₃OH (IX), 12 2,5-Me(MeS)C₆H₃OH (X), 69 2,4-Me(MeS)C₆H₃OH (XI), trace, 96, several days; II, CH₂Cl₂, Et₃N, 13 IX, 11 X, 67 XI, trace, 91, 1 day; II, CH₂Cl₂, Ph₃P, 11 IX, 3 X, 40 XI, trace, 54, several days; II, MeOH, Et₃N, 10 IX, 34 X, 49 XI, trace, 93, several days; II, MeOH, MeONa, 7 IX, 47 X, 34 XI, trace, 88, 1 hr.; III, CH₂Cl₂, Et₃N, 28 2,4,6-Me₂(MeS)C₆H₂OH (XII), 5 2,4,5-Me₂(MeS)C₆H₂OH (XIII), -, 57, 90, several days; III, MeOH, MeONa, 13 XII, 44 XIII, -, 38, 95, 1 hr.; V, CH₂Cl₂, Et₃N, -, 14 2,4,6,3-Me₃(MeS)C₆H₂OH (XIV), -, 80, 94, several days;

V, MeOH, MeONa, -, 42 XIV, -, 54, 96, 1 hr.; VI, CH₂Cl₂, Et₃N, -, 6
 2,6,3-Me₂(MeS)C₆H₂OH (XV), 64 2,6,4-Me₂(MeS)C₆H₂OH (XVI), 18, 88, several
 days; VI, MeOH, MeONa, -, 28 XV, 38 XVI, trace, 66, 1 hr. Treatment of
 the I with NaSH gave the following results [I used, % o-, % m-, and %
 p-substituted phenol, resp., % reduction **product**, sum of identified
 reaction **products** (%) given]: II, 5 2,6-Me(HS)C₆H₃OH (XVII), -,
 20 2,4-Me(HS)C₆H₃OH (XVIII), 23, 55 {in addition 7% [3,4-Me(HO)C₆H₃]2S was
 isolated as the sulfone (XIX) (see below)}; III, -, 10 2,4,6-Me₂(HS)C₆H₂OH
 (XX), -, 65, 75; V, -, trace 2,4,6,3-Me₃(HS)C₆HOH, -, 79, 79; VI, 20
 2,6,4-Me₂(HS)C₆H₂OH (XXI), -, -, 38, 77 {in addition 19% [3,5,4-
 Me₂(HO)C₆H₂]2SO₂ (XXII) was isolated as sulfone (see below)}. Treatment
 of the I with MeSO₂H gave the following results (I used and %
product obtained given): II, 91 2,5-Me(MeSO₂)C₆H₃OH (XXIII); III,
 94 2,4,5-Me₂(MeSO₂)C₆H₂OH (XXIV); IV, 16 2,5,4-Me₂(MeSO₂)C₆H₂OH (XXV); V,
 88 2,4,6,3-Me₃(MeSO₂)C₆HOH (XXVI); VI, 90 2,6,3-Me₂(MeSO₂)C₆H₂OH (XXVII).
 Treatment of the I with PhSH gave the following results (all
products were isolated as sulfones) (I used, solvent, base, % o-,
 % m-, and % p-substituted phenol, resp., % reduction **product**,
 remarks given): II, MeOH, MeONa, -, 2,5-Me(PhSO₂)C₆H₃OH (XXVIII), 0.8
 2,4-Me(PhSO₂)C₆H₃OH (XXIX), -, in addition 1% mixture probably of XXVIII and
 XXIX was obtained; III, MeOH, MeONa, 2,4,6-Me₂(PhSO₂)C₆H₂OH (XXX), 12
 2,4,5-Me₂(PhSO₂)C₆H₂OH (XXXI), -, 30, in addition 5% mixture of XXX and XXXI
 was obtained; V, MeOH, MeONa, -, 6 2,4,6,3-Me₃(PhSO₂)C₆HOH, -, 25, -; VI,
 MeOH, MeONa, -, 2,6,3-Me₂(PhSO₂)C₆H₂OH (XXXII), 2,6,4-Me₂(PhSO₂)C₆H₂OH
 (XXXIII), 2, 3% mixture of XXXII and XXXIII was obtained; VI, CH₂Cl₂, Et₃N,
 -, -, 62 XXXIII, 19, -; VII, CHCl₃, Et₃N, -, -, 51 2,6,4-Et₂(PhSO₂)C₆H₂OH,
 -, -. The following results were obtained with the I and PhSO₂H (I used
 and % **product** obtained given): VI, 68 XXXII; VII, 79
 2,6,3-Et₂(PhSO₂)C₆H₂OH (XXXIV); VIII, 30 2,6,3,4-Et₂Ph(PhSO₂)C₆HOH (XXXV).
 In the following exptl. work, methylation was accomplished in the usual
 way with excess Me₂SO₄ and aqueous NaOH at room temperature Oxidns. were
 effected
 by dissolving the corresponding thioether in a little AcOH, adding 1.5
 times the calculated amount of 30% H₂O₂ (if the thioether precipitated, it was
 redissolved by dropwise addition of AcOH), allowing the mixture to stand
 overnight at room temperature, warming 30 min. on a H₂O bath, precipitating the
product with H₂O, extracting oily **product** with CH₂Cl₂,
 washing the extract with saturated aqueous NaHCO₃, drying, and evaporating;
 the residues
 containing sulfones with free OH groups were **crystallized** by rubbing with
 Et₂O; sulfones without free OH groups were distilled in vacuo; if
crystalline product precipitated from the oxidation mixture, the mixture
 was kept several hrs. in a refrigerator, the precipitate filtered off, and
 washed
 peroxide-free with dilute AcOH. In the reactions of the I with MeSH, NaSH,
 and H₂S, mixts. of isomers were obtained in many cases, which were not
 quant. separable by the usual methods. In these cases, the yields given
 above were determined from other data. The compds. were identified by mixed
 m.ps., vapor phase chromatography, and m.p. diagrams with pure compds. or
 related derivs. The I dissolved in just the required amount of absolute MeOH
 at
 room temperature, the solution added dropwise with stirring during 1 hr. to
 MeSH in
 MeOH-MeONa (content 0.5 g. MeSH, 0.53 g. Na in 10 ml. MeOH), the mixture
 allowed to stand 1 hr., poured into 3 vols. H₂O, acidified with HCl, extracted
 with Et₂O, the extract washed with H₂O, dried, evaporated, and the residue
 distilled
 gave a distillate whose composition was determined by gas chromatography. The
 separation
 of the reduction **products** and the o-substituted phenols from m- and

p-substituted phenols was accomplished by fractional distillation. An analogous procedure was used for the isomeric mixture obtained from the I and H₂S and NaSH. The I dissolved in just the required amount of solvent at room temperature, the solution treated with MeSH (2-4 moles/mole I) and Et₃N (0.05-0.1 ml./g. I), the mixture allowed to stand several days in a bomb tube, the solvent and excess MeSH evaporated, the residue taken up in Et₂O, the Et₂O solution washed with dilute HCl and saturated aqueous NaHCO₃, and worked up as above gave the products. The I with Ph₃P (0.4 g./g. I) treated as in the Et₃N expts., the solvent and excess MeSH evaporated, the residue taken up in dilute aqueous NaOH, the insol. Ph₃P extracted with CH₂Cl₂, and the aqueous alkaline phase worked up as in the Et₃N experiment gave the products. The isolation and properties of only the newly prepared compds. here and below were as follows. A mixture of 15% X and 85% XI oxidized (H₂O₂) and the mixture recrystd. from dilute AcOH gave 2,4-Me(MeSO₂)C₆H₃OH, m. 126-7°, methylated to the Me ether. Crude XIII, obtained by dlstn., recrystd. from petr. ether gave XIII, m. 51-2°; Me ether (XXXVI) m. 50-1° (petr. ether). Oxidation of XIII gave XXIV, m. 139-40° (dilute AcOH); Me ether (by oxidation of XXXVI) m. 122-4° (dilute AcOH). From the reaction of IV with MeSH with Et₃N was isolated 42% unidentified compound, C₁₂H₂₀O₃S, m. 127-8° (MeOH), ν (CCl₄) 1755, 1237, and 1089 cm.⁻¹ Crude XIV recrystd. from petr. ether gave XIV, m. 58-9°; Me ether b₁₀ 130-50°. Oxidation of XIV gave XXVI, m. 154-5°. The I dissolved in a little absolute MeOH, the solution added dropwise with stirring during 1 hr. to 20% NaSH-absolute MeOH, the mixture allowed to stand 1 hr., poured into 3 vols. H₂O, acidified, exhaustively extracted with Et₂O, the extract evaporated, and the product distilled to 150°/0.3 mm. gave a residue (larger amts. from the I with a free 4-position), which oxidized yielded the corresponding 4, 4'-dihydroxydiphenyl sulfones; the distillate dissolved in a little MeOH, the solution treated with 5% aqueous HgCl₂, the precipitate (XXXVII) filtered off, and the filtrate worked up gave the corresponding reduced phenol; the XXXVII treated with Et₂O-concentrated HCl and the Et₂O layer distilled gave the mercaptans, b_{0.3} 60-100°. Thus was obtained XX, m. 38-40° (petr. ether); Me ether (XXXVIII) m. 45-6°. The I dissolved in the smallest amount of solvent (CH₂Cl₂ in this case), the solution added dropwise with shaking to liquefied H₂S (10 ml./g. I) followed by Et₃N (1 drop/g. I), the mixture allowed to stand a specified time (2 days in this case) with continuous cooling with Dry Ice, the H₂S evaporated, and the residue distilled to 150°/0.3 mm. gave 16% o-cresol (XXXIX) and (by oxidation of the mixture) 36% XIX. The above experiment repeated, allowed to stand 10 days, the mixture reduced in the cold with Zn and acid, and worked up gave 46% XXXIX, 2% XVII, 3% 2,5-Me(HS)C₆H₃OH (XL), 10% XVIII, and 2% XIX. The reaction repeated with absolute MeOH, the mixture allowed to stand 8 days, reduced in the cold with Zn and acid, and worked up gave 54% XXXIX, 0.4% XVII, 6% XL, 5% XVIII, and 4% XIX. III treated 2.5 days with H₂S in CH₂Cl₂, the H₂S evaporated, the residue treated with EtOH, the precipitate (40%) filtered off, washed with EtOH, and recrystd. twice from EtOH gave XLI, m. 165-70° (decomposition); from the filtrate was isolated 38% 2,4-Me₂C₆H₃OH. MeSO₂Cl (3-4 g. for each g. I to be used) reduced by the procedure for the preparation of EtSO₂Na (Houben-Weyl-Muller, Methods Organic Chemistry, Stuttgart, 1955, IX, p. 292), the resulting sirupy solution of MeSO₂Na acidified with 5% MeOH-HCl under ice cooling until weakly acid to Congo red, the precipitate filtered off, washed with MeOH, the filtrate and

washings added to the I dissolved in the least amount of MeOH, the mixture allowed to stand 2 days, warmed 30 min., the MeOH distilled, the residue taken up in H₂O, the solution scratched, allowed to stand some time in the cold, and the precipitate filtered off gave the **product**. Thus were obtained XXIII, m. 116-17° (dilute aqueous AcOH), and XXVII, m. 131-2° (aqueous MeOH). CH:CH.CMe:CH.C(OAc)₂.CO (XLII) (2 g.) treated with MeSH solution (MeSH-MeOH-MeONa) as above, the mixture worked up, the oily **product** methylated in the cold, the mixture heated 15 min. on a H₂O bath with excess aqueous NaOH, treated again with Me₂SO₄, worked up, the **product** distilled (b₁₀ 150-70°), and recrystd. from petr. ether gave 44 % 4,1,2,5-Me(MeO)₂(MeS)C₆H₂, m. 58-9°, oxidized to 90% corresponding sulfone (XLIII), m. 140-1° (dilute AcOH). XLII (1.5 g.) treated with MeSO₄H like the I and the **product** saponified and methylated gave 1.12 g. XLIII. The I treated with PhSH (2 moles/mole I) as a 20% solution of PhSNa in absolute MeOH, the **product** dissolved in aqueous alkali, filtered, the filtrate acidified, extracted with Et₂O, the extract

evaporated, the residue distilled to 150°/10 mm. (reduction **product** and excess PhSH), and the residual viscous oil oxidized gave the sulfones. The I treated with PhSH using Et₃N (CA 51, 12848a) and the **products** oxidized gave the sulfones. Thus were obtained XXXIII, m. 242-4.5° (EtOH), and XXXIV, m. 157-60° [Me ether m. 65-6.5° (dilute AcOH)]. IV treated with PhCH₂SH with MeOH-MeONa (usual procedure) gave 8% mesitol and 45% 2,4,6,3-Me₃(PhCH₂S)C₆HOH (**crude**), b_{0.3} 160-200°, m. 70-1° (petr. ether), oxidized to the sulfone, m. 158-9°. II and XVIII treated with Et₃N [by Kotlan and Wessely's procedure (loc. cit.) for the reaction of the I with PhSH with Et₃N], the solvent evaporated, and the residue oxidized gave 60% XIX, m. 274-6° (AcOH). VI treated similarly with XXI gave 40% XXII, m. 303-6° (AcOH). The appropriate I treated with PhSO₂H (by the procedure of K. and W., loc. cit.) gave XXXII, m. 128-9° (dilute AcOH), XXXIV, m. 86-7° (dilute AcOH), and XXXV, m. 156-8° (dilute AcOH). Comparison syntheses: O-Carbethoxyphenolsulfonyl chlorides were prepared from the corresponding phenolsulfonic acid di-Na salts [procedure of Karrer and Laiser (CA 39, 5197) for an analogous compound]. Sulfonyl chlorides of phenol ethers were prepared by treating the latter with ClSO₃H (Kolhatkar and Bokil, CA 25, 2126). The sulfonyl chlorides were reduced to mercaptans by the procedure of Karrer and L. (CA 39, 5197). Oxidation of 2,4-Me(MeS)C₆H₃OMe (Shah, et al., CA 28, 1248) gave 76% sulfone, m. 71-2° (dilute AcOH). Oxidation of 2,5-Me(MeS)C₆H₃OMe (loc. cit.) gave 78% sulfone, m. 104-5° (dilute AcOH). From 2,4-Me(NaO₃S)C₆H₃ONa (Hultquist, et al., CA 46, 6608h) was prepared 69% 2,4-Me(NaO₃S)C₆H₃OCO₂Et (XLIV). From **crude** XLIV was prepared 91% 2,4-Me(ClO₂S)C₆H₃OCO₂Et (XLV), m. 48-9° (petr. ether). **Crude** XLV reduced, saponified, and the **product** (b₁₀ 130-60°) recrystd. several times from petr. ether gave XVIII, m. 41-2°. 3,5,2-Me₂(MeO)C₆H₂NH₂ (CA 51, 12848a) diazotized in H₂SO₄ solution, the diazonium solution converted by SO₂ (procedure of Shah, et al.,

CA

28, 1248) to **crude** 2,4,6-Me₂(HO₂S)C₆H₂OMe, the latter reduced, the mixture steam distilled, and the **product** distilled in vacuo gave 44% 2,4,6-Me₂(HS)C₆H₂OMe (XLVI), b₁₀ 100-2°. XLVI methylated, the **product** (91%) distilled (b₁₀ 120-50°), and recrystd. from petr. ether gave XXXVIII, m. 45-6°, oxidized to 77% sulfone, m. 55-6° (dilute AcOH). 2,4,5-Me₂(O₂N)C₆H₂SO₃Na hydrogenated with Raney Ni at 60°/50 atmospheric H pressure, filtered, the filtrate treated with 40 g. H₂SO₄, the solution treated with N oxide gas with ice-cooling and stirring until the solution colored KI-starch paper blue, added to hot dilute H₂SO₄, after N evolution ceased the mixture neutralized with BaCO₃, filtered, the filtrate concentrated to 200 ml., treated with 13 g. NaOH and 35

g. ClCO_2Et , the solution evaporated to dryness, the residue ground with 100 g. PCl_5 , the mixture decomposed with ice H_2O , and the precipitate filtered off gave 58

g. 2,4,5-Me₂(ClO₂S)C₆H₂OCO₂Et (XLVII), amorphous; a portion extracted with boiling petr. ether and recrystd. using C gave XLVII, m. 52.5-4.0°.

Crude XLVII reduced, saponified, and the product distilled gave 4.8 g. 2,4,5-Me₂(HS)C₆H₂OH, b₁₀ 120-50°, m. 90-2°, methylated to XXXVI, m. 50-1°. 2,4-Me₂C₆H₃OMe converted with ClSO₃H to the 5-SO₂Cl derivative, the latter reduced, the product isolated by steam distillation, purified by distillation (b₁₀ 120-50°), and recrystd. from petr. ether gave 2,4,5-Me₂(HS)C₆H₂OMe, m. 37-9° (petr. ether), methylated to XXXVI. From 2,5-Me₂C₆H₃OH was prepared 99% 2,5,4-Me₂(NaO₃S)C₆H₂ONa (XLVIII) (Hultquist, et al., CA 46, 6608h). From crude XLVIII was prepared 58% 2,5,4-Me₂(NaO₃S)C₆H₂OCO₂Et, converted to 40% 2,5,4-Me₂(ClO₂S)C₆H₂OCO₂Et (XLIX), m. 77-8° (petr. ether). XLIX reduced, saponified, and the product distilled (130-60°/10 mm.) gave 75% 2,5,4-Me₂(HS)C₆H₂OH (L), m. 93-4° (petr. ether). L and equimolar amts. of MeI and NaOEt in EtOH heated 3 hrs. at 60° in a bomb tube gave 44% 2,5,4-Me₂(MeS)C₆H₂OH, m. 96-7° (petr. ether), oxidized to 52% XXV, m. 143-4° (dilute AcOH). L methylated with MeI as above gave 62% XVI, m. 59-61° (petr. ether), oxidized to 62% sulfone, m. 156-7° (dilute AcOH). 4,1,2-Me(MeO)C₆H₃ treated with ClSO₃H gave 94% 5-SO₂Cl derivative, m. 78-80°, reduced to 4,1,2,5-Me(MeO)₂(HS)C₆H₂, m. 58-9° (petr. ether), methylated to 89% 4,1,2,5-Me(MeO)₂(MeS)C₆H₂. 2,6-Et₂C₆H₃OH oxidized with Pb(OAc)₄ (Metlesics, et al., CA 52, 11775a) gave 52% VII, b_{0.2} 82-4°. VII treated with PhMgBr (method of Wessely, et al., CA 47, 9936a), the mixture steam distilled in vacuo, and the product distilled gave 3.4 g. 2,6,3-Et₂PhC₆H₂OH (LI), b_{0.1} 125-35°. LI (3.5 g.) oxidized with Pb(OAc)₄ in CHCl₃ gave 2.14 g. VIII, m. 105-6°, which gave by Thiele rearrangement (cf. Wessely and Metlesics, CA 49, 9529c) 73% 2,6,5,1,3-Et₂Ph(HO)C₆H₃, m. 112-13°, not oxidized by FeCl₃ to a quinone.

=> d his all

(FILE 'HOME' ENTERED AT 12:12:37 ON 26 JUL 2005)

FILE 'REGISTRY' ENTERED AT 12:12:50 ON 26 JUL 2005

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          E DIHYDROXYDIPHENYLSULFONE/CN 5
          E TRIHYDROXYTRIPHENYLSULFONE/CN 5
L1         47 S DIHYDROXY(L)DIPHENYLSULFONE
L2         0 S TRIHYDROXY(L)TRIPHENYLSULFONE
L3         0 S TRIHYDROXY(L)TRIPHENYLSULPHONE
L4         0 S TRIHYDROXY(L)?PHENYLSULFONE

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FILE 'MEDLINE, BIOSIS, EMBASE, CAPLUS' ENTERED AT 12:15:10 ON 26 JUL 2005

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L5         3 FILE MEDLINE
L6         2 FILE BIOSIS
L7         1 FILE EMBASE
L8        1120 FILE CAPLUS
TOTAL FOR ALL FILES
L9        1126 S (L1 OR DIHYDROXYDIPHENYLSULFONE OR DIHYDROXYDIPHENYLSULPHONE)
L10        0 FILE MEDLINE
L11        0 FILE BIOSIS
L12        0 FILE EMBASE
L13        0 FILE CAPLUS
TOTAL FOR ALL FILES
L14        0 S TRIHYDROXYTRIPHENYLSULFONE OR TRIHYDROXY(L)TRIPHENYLSULFONE O

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L15	0	FILE MEDLINE
L16	0	FILE BIOSIS
L17	0	FILE EMBASE
L18	1	FILE CAPLUS
TOTAL FOR ALL FILES		
L19	1	S ?TRIPHENYLSULFONE? OR ?TRIPHENYLSULPHONE?
L20	0	FILE MEDLINE
L21	0	FILE BIOSIS
L22	0	FILE EMBASE
L23	0	FILE CAPLUS
TOTAL FOR ALL FILES		
L24	0	S L9 AND L19
L25	0	FILE MEDLINE
L26	0	FILE BIOSIS
L27	0	FILE EMBASE
L28	46	FILE CAPLUS
TOTAL FOR ALL FILES		
L29	46	S (DISSOLV? OR SUSPEND?) AND L9
L30	0	FILE MEDLINE
L31	0	FILE BIOSIS
L32	0	FILE EMBASE
L33	0	FILE CAPLUS
TOTAL FOR ALL FILES		
L34	0	S ALKALI METAL HYDROXIDE AND L29
L35	0	FILE MEDLINE
L36	0	FILE BIOSIS
L37	0	FILE EMBASE
L38	4	FILE CAPLUS
TOTAL FOR ALL FILES		
L39	4	S CRUDE AND L29
L40	3	FILE MEDLINE
L41	1	FILE BIOSIS
L42	2	FILE EMBASE
L43	1	FILE CAPLUS
TOTAL FOR ALL FILES		
L44	7	S WAKAYAMA F?/AU
L45	32	FILE MEDLINE
L46	26	FILE BIOSIS
L47	29	FILE EMBASE
L48	188	FILE CAPLUS
TOTAL FOR ALL FILES		
L49	275	S YANASE N?/AU
L50	369	FILE MEDLINE
L51	458	FILE BIOSIS
L52	326	FILE EMBASE
L53	994	FILE CAPLUS
TOTAL FOR ALL FILES		
L54	2147	S KITAHARA T?/AU
L55	0	FILE MEDLINE
L56	5	FILE BIOSIS
L57	0	FILE EMBASE
L58	21	FILE CAPLUS
TOTAL FOR ALL FILES		
L59	26	S NATE N?/AU
L60	7	FILE MEDLINE
L61	10	FILE BIOSIS
L62	2	FILE EMBASE
L63	28	FILE CAPLUS
TOTAL FOR ALL FILES		
L64	47	S OI F?/AU

L65 0 FILE MEDLINE
 L66 0 FILE BIOSIS
 L67 0 FILE EMBASE
 L68 2 FILE CAPLUS

TOTAL FOR ALL FILES

L69 2 S L64 AND L59 AND L54 AND L49

FILE 'REGISTRY' ENTERED AT 12:22:30 ON 26 JUL 2005

E "2,4'-DDS"/CN 5
 E "4,4'-DDS"/CN 5
 E "2,4'-DIHYDROXYDIPHENYLSULFONE"/CN
 E "2,4'-DIHYDROXYDIPHENYL SULFONE"/CN

L70 4 S E3-E6

E "4,4'-DIHYDROXYDIPHENYL SULFONE"/CN 5

L71 1 S E3

FILE 'MEDLINE, BIOSIS, EMBASE, CAPLUS' ENTERED AT 12:24:44 ON 26 JUL 2005

L72 0 FILE MEDLINE
 L73 32 FILE BIOSIS
 L74 0 FILE EMBASE
 L75 1750 FILE CAPLUS

TOTAL FOR ALL FILES

L76 1782 S L70 OR L71

L77 1 FILE MEDLINE

L78 1 FILE BIOSIS

L79 3 FILE EMBASE

L80 750 FILE CAPLUS

TOTAL FOR ALL FILES

L81 755 S "4,4'-DIHYDROXYDIPHENYL SULFONE"

L82 0 FILE MEDLINE

L83 0 FILE BIOSIS

L84 0 FILE EMBASE

L85 170 FILE CAPLUS

TOTAL FOR ALL FILES

L86 170 S "2,4'-DIHYDROXYDIPHENYL SULFONE"

L87 0 FILE MEDLINE

L88 0 FILE MEDLINE

L89 8 FILE BIOSIS

L90 1 FILE EMBASE

L91 737 FILE CAPLUS

TOTAL FOR ALL FILES

L92 746 S (L76 OR L81 OR L86) AND (MAKE OR MAKING OR PROCESS? OR PRODUC

L93 0 FILE MEDLINE

L94 0 FILE BIOSIS

L95 0 FILE EMBASE

L96 0 FILE CAPLUS

TOTAL FOR ALL FILES

L97 0 S TRI HYDROXY TRIPHENYL SULFONE OR TRIHYDROXY TRIPHENYL SULFONE

L98 0 FILE MEDLINE

L99 0 FILE BIOSIS

L100 1 FILE EMBASE

L101 6 FILE CAPLUS

TOTAL FOR ALL FILES

L102 7 S TRIPHENYLSULFONE OR TRIPHENYL SULFONE OR TRIHYDROXY(L) (SULFON

L103 0 FILE MEDLINE

L104 0 FILE BIOSIS

L105 0 FILE EMBASE

L106 0 FILE CAPLUS

TOTAL FOR ALL FILES

L107 0 S L102 AND L92

L108 0 FILE MEDLINE
 L109 0 FILE BIOSIS
 L110 0 FILE EMBASE
 L111 8 FILE CAPLUS
 TOTAL FOR ALL FILES
 L112 8 S L92 AND CRYSTAL? AND CRUDE
 L113 0 FILE MEDLINE
 L114 0 FILE BIOSIS
 L115 0 FILE EMBASE
 L116 5 FILE CAPLUS
 TOTAL FOR ALL FILES
 L117 5 S L112 NOT (L39 OR L69)

=> log y

COST IN U.S. DOLLARS	SINCE FILE	TOTAL
	ENTRY	SESSION
FULL ESTIMATED COST	74.45	202.41
DISCOUNT AMOUNTS (FOR QUALIFYING ACCOUNTS)	SINCE FILE	TOTAL
	ENTRY	SESSION
CA SUBSCRIBER PRICE	-3.65	-8.03

STN INTERNATIONAL LOGOFF AT 12:29:30 ON 26 JUL 2005